

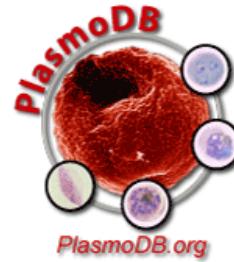


ApiDB.org

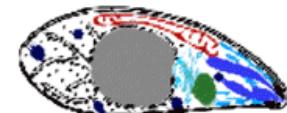
Apicomplexan database resources



CryptoDB.org



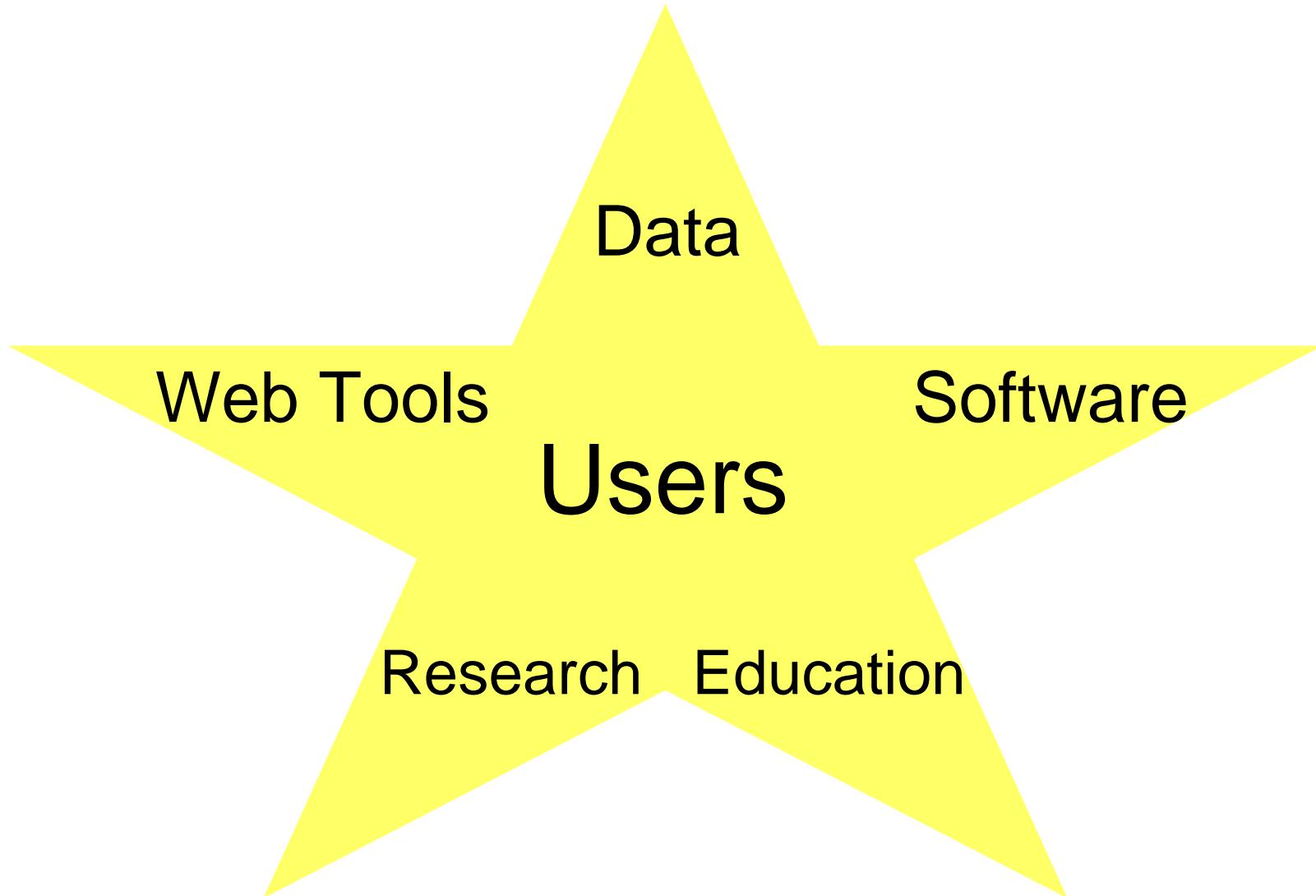
PlasmoDB.org



ToxoDB.org

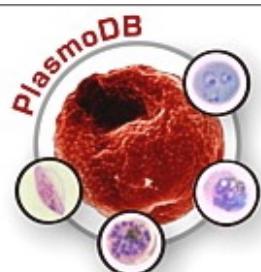
Aaron J. Mackey, Ph.D.
ApiDB Project Coordinator

What is ApiDB?



New Datatypes in 2005

- *P. vivax* genome annotation
- Y2H interaction (*P. falciparum*)
- SAGE-based RNA abundance (*T. gondii*)
- Genetic markers and mapping (*T. gondii*)
- Synteny (*Cryptosporidium*, *Plasmodium*)
- Metabolic Pathways (*Crypto*, *Toxo*)



| | |
|--------------------------------------|----------------------------|
| Home | Queries & Tools |
| Data Sources | Downloads |
| My Query History | |
| Resources / Site Map | Help ? |

Did you know?

Did you know you can get gene families?

Read all the 'Did you knows'!

Featured dataset

Transcriptome: TIGR Gene Indices for *P. vivax*

[See all datasets](#)



Access the latest PlasmoCD!!

| Gene | Bait Start | Bait End | Prey Start | Prey End | Times Observed | Times Reproduced | Baits Interacting with Found Gene | Prey Interacting with Found Gene | Query Gene Was: |
|-------------|------------|----------|------------|----------|----------------|------------------|-----------------------------------|----------------------------------|-----------------|
| MAL13P1.336 | 1346 | 1585 | 798 | 969 | 4 | 3 | 12 | | prey |
| MAL8P1.104 | 3222 | 4172 | 879 | 968 | 3 | 2 | 7 | | prey |
| MAL8P1.153 | 1824 | 1977 | 716 | 964 | 5 | 2 | 20 | | prey |
| MAL8P1.95 | 453 | 486 | 722 | 755 | 1 | 1 | 9 | | prey |
| PF08_0060 | 3893 | 4077 | 570 | 967 | 6 | 6 | 13 | | prey |
| PF10_0075 | 3894 | 3990 | 878 | 967 | 3 | 1 | 6 | | prey |
| PF11_0241 | 689 | 1081 | 718 | 971 | 2 | 1 | 6 | | prey |
| PF11_0504 | 3378 | 3542 | 513 | 889 | 11 | 1 | | 8 | bait |
| PF13_0156 | 358 | 793 | 878 | 969 | 1 | 1 | 4 | | prey |
| PFA0125c | 2325 | 2582 | 692 | 737 | 1 | 1 | 7 | | prey |
| PFB0540w | 2678 | 2996 | 465 | 970 | 4 | 1 | 7 | | prey |
| PFE0130c | 2940 | 3105 | 472 | 969 | 2 | 2 | 4 | | prey |
| PFF0095c | 2727 | 2904 | 798 | 967 | 1 | 1 | 2 | | prey |
| PFF0165c | 644 | 900 | 891 | 967 | 1 | 1 | 4 | | prey |
| PFF0220w | 2541 | 6486 | 722 | 969 | 3 | 2 | 11 | | prey |
| PFF0590c | 1897 | 1930 | 891 | 969 | 2 | 1 | 5 | | prey |
| PFF1365c | 29375 | 29670 | 764 | 925 | 1 | 1 | 8 | | prey |
| PFI0225w | 2207 | 2573 | 371 | 964 | 3 | 3 | 20 | | prey |
| PFI0240c | 3644 | 3931 | 722 | 755 | 1 | 1 | 5 | | prey |
| PFI1150w | 1600 | 1896 | 718 | 967 | 2 | 1 | 6 | | prey |
| PFL0135w | 866 | 1033 | 718 | 755 | 1 | 1 | 5 | | prey |
| PFL0275w | 3657 | 3782 | 723 | 750 | 1 | 1 | 7 | | prey |
| PFL0350c | 4960 | 5289 | 793 | 971 | 4 | 2 | 4 | | prey |
| PFL1215c | 1929 | 2054 | 472 | 783 | 1 | 1 | 1 | | prey |
| PFL1395c | 2782 | 2891 | 891 | 961 | 1 | 1 | 6 | | prey |

Genes By Y2H Protein-Protein Interaction

Protein interactions were experimentally determined using the yeast two hybrid system as described in LaCount DJ, Vignali M, Chettier R, Phansalkar A, Bell R, Hesselberth JR, Schoenfeld LW, Ota I, Sahasrabudhe S, Kurschner C, Fields S, Hughes RE. A protein interaction network of the malaria parasite Plasmodium falciparum. Nature. 2005 438:103-7.

"Times reproduced" refers to the number of independent yeast two-hybrid screens in which a given interaction was found. Interactions found in two or more yeast two-hybrid screens were independently reproduced, and are thus more likely to be true yeast two-hybrid

interaction was identified in all yeast two-screen for several reasons: (1) The origin plated on selective media; (2) The same multiple positive colonies; or (3) The prey fragments, all of which interact with a given interaction.

Queries & Tools :: Summary Result

Query: Genes By Y2H Protein-Protein Interaction

Parameters:

Gene ID: PF08_0034

Restrict by the minimum number of searches that found this interaction: 2

Restrict by the minimum number of times this interaction was found: 2

Specified protein is bait or prey: either

Results: 8 (showing 1 to 8)

[Download a report of this result](#)

Gene ID PF08_003

Restrict by the minimum number of searches that found this interaction

2

Restrict by the minimum number of times this interaction was found

2

Specified protein is bait or prey

either

[Get Answer](#)

| Gene | Product | Bait Start | Bait End | Prey Start | Prey End | Times Observed | Baits Interacting with Found Gene | Preys Interacting with Found Gene | Query Gene Was: |
|-------------|-------------------------|------------|----------|------------|----------|----------------|-----------------------------------|-----------------------------------|-----------------|
| MAL13P1.336 | hypothetical protein | 1346 | 1585 | 798 | 969 | 4 | 12 | | prey |
| MAL8P1.104 | hypothetical protein | 3222 | 4172 | 879 | 968 | 3 | 7 | | prey |
| MAL8P1.153 | hypothetical protein | 1824 | 1977 | 716 | 964 | 5 | 20 | | prey |
| PF08_0060 | asparagine-rich antigen | 3893 | 4077 | 570 | 967 | 6 | 13 | | prey |
| PFL0350c | hypothetical | 2640 | 3165 | 470 | 869 | 3 | 4 | | prey |
| PFI0225w | protein, expressed | 2541 | 3488 | 722 | 969 | 3 | 11 | | prey |
| PFI0225w | hypothetical protein | 2207 | 2573 | 371 | 964 | 3 | 20 | | prey |
| PFL0350c | hypothetical protein | 4960 | 5289 | 793 | 971 | 4 | 4 | | prey |

Get filtered list of interacting proteins with Gcn5 in History

Genes Orthologous to Genes in a Query Result

Find the genes that are orthologs to the genes in prior query result. First use a regular query to find genes from one species. For example, run a query find *P.falciparum* genes with keyword 'kinase'. Then go to [My Query History](#) to get the "Dataset" ID for that result. Drop the Dataset ID into the Dataset parameter, and run this query. Note: Dataset IDs from Sequence History or IDs imported from PlasmoDB 4.4 will not work.

Ortholog groups were generated from 61 species using OrthoMCL as described in Li L, Stoeckert CJ Jr, Roos DS. OrthoMCL: identification of ortholog groups for eukaryotic genomes. Genome Res. 2003 13:2178-89. These species include the 55 used to generate ortholog groups at the [OrthoMCL DB site](#) plus *P. vivax*, *Leishmania major*, *T. brucei*, *T. cruzi*, *Apis mellifera* (honeybee) and *S. purpatus* (sea urchin). The OrthoMCL DB site is described in Feng et al. Nucleic Acids Res. 2006 Database Issue.

Queries & Tools :: Summary Result

Query: Genes Orthologous to Genes in a Query Result

Parameters: PlasmoDB dataset: 3499

Organism: *Plasmodium vivax* Sal-1

Results: 7 (showing 1 to 7)

[Download a report of this result](#)



Home

Data Sources

My Query Hist

Resources / Site Map

Did you kno

Did you know you ca
get help?

Read al

| Gene | Product |
|----------|---|
| Pv115305 | hypothetical protein |
| Pv123205 | CAF1 ribonuclease domain containing protein |
| Pv097640 | hypothetical protein, conserved |
| Pv002045 | hypothetical protein |

Get putative interactors of GCN5-related in *P. vivax* based on orthology to *P. falciparum*

Pv084385 hypothetical protein

Genes with mass spec.-based evidence of expression

[Home](#) [Downloads](#) [Tools](#) [Queries](#) [BLAST](#) [History](#) [CDs & Links](#) [Browse](#) [Data Sources](#) [SRT](#) [Help](#)

Description

This PlasmoDB query can be used to identify annotated genes of the *P. falciparum* genome sequence that have evidence of expression in a specific *P. falciparum* lifecycle stage or within a subcellular fraction of the parasite. You can select the experimental condition which have MS/MS peptide evidence and only genes with proteomics evidence will be returned, i.e. genes whose proteins have minimum number of 1 observed MS spectrum or identified peptides. You can specify a higher number for these values in order to select proteins that will be more abundant in the examined experimental condition/developmental stage/subcellular fraction. Please note however that these values are not strictly quantitative as the detection of proteins in MS/MS analyses is dependent on solubility of the proteins and other factors. You will also be able to specify the amount of amino acid sequence (sequence coverage; in % that were identified in the respective assay. Note that even if this parameter is set to 0% by default, only genes with at least one spectrum for the specified stage will be returned. Since proteins can be expressed in multiple stages, multiple rows of hits can be associated with one gene.

Current data sets stored in PlasmoDB:

- a. Florens 2002: Merozoites, Trophozoites, Sporozoites, Gametocytes
- b. Florens 2004: Membranes_iRBC, CompleteTrophozoiteSchizont
- c. Lasonder 2002: Gametocytes, Gametes, TrophozoitesSchizont

Selecting "any" will result in returning values for all the available datasets.

Please refer to the origin papers for more information on the experiments and experimental conditions.

References:

- a) Florens, L., Washburn, M.P., Raine, J.D., Anthony, R.M., Grainger, M., Haynes, J.D., Moch, J.K., Muster, N., Sacci, J.B., Tabb, D.L., Witney, A.A., Wolters, D., Wu, Y., Gardner, M.J., Holder, A.A., Sinden, R.E., Yates, J.R., Carucci, D.J. (2002) A proteomic view of the *Plasmodium falciparum* life cycle. *Nature* 419: 520-526.
- c) Lasonder, E., Ishihama, Y., Andersen, J.S., Vermunt, A.M., Pain, A., Sauerwein, R.W., Eling, W.M., Hall, N., Waters, A.P., Stunnenberg, H.G., Mann M. (2002) Analysis of the *Plasmodium falciparum* proteome by high-accuracy mass spectrometry. *Nature*. 419:537-542.
- b) Florens, L., Liu X., Wang, Y., Yang, S., Schwartz, O., Peglar, M., Carucci, D.J., Yates, J.R., Wu, Y. Proteomics Approach Reveals Novel Proteins on the Surface of Malaria-Infected Erythrocytes (in press)

Query parameters

| | | |
|------------------------------------|---|---|
| Chromosome: | <input type="text" value="all"/> | Help! |
| Lifecycle stage: | <input type="text" value="sporozoite"/> | Help! |
| Minimum percent sequence coverage: | <input type="text" value="0"/> | <i>an integer >= 0 and <= 100</i> Help! |
| Minimum number of spans: | <input type="text" value="2"/> | <i>an integer >= 1</i> Help! |
| Minimum number of spectra: | <input type="text" value="1"/> | <i>an integer >= 1</i> Help! |

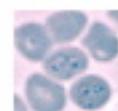
Query options

Genes By PlasmoDB 4.4 Dataset

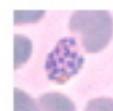
Find genes by importing a PlasmoDB 4.4 query result. The Query History page at the PlasmoDB version 4.4 site (<http://plasmodb.org>) now contains a column called "Dataset." To import any of the queries run at the PlasmoDB 4.4 site, cut and paste the Dataset identifier from the PlasmoDB Query History page.

PlasmoDB dataset [?](#)

[Get Answer](#) [Expand Question](#)



Query History



[Home](#) [Downloads](#) [Tools](#) [Queries](#) [BLAST](#) [History](#) [CDs & Links](#) [Browse](#) [Data Sources](#) [SRT](#) [Help](#)

This page displays queries you have run in the current session. Use it to link back to the result sets of those queries, or to combine them into new result sets. [Jump to the most recent query.](#)

| Select | Query | Time | Result | Download | Dataset | Size |
|--------------------------|--|------------|---|----------|---------|------|
| <input type="checkbox"/> | Genes [type=annotated chr=all] with mass spec. evidence of expression; stage:sporozoite, aa_seq percent covered>=0, num_spans>=2, spectrum_count>=1 | 4:59:57 PM | view download | 239156 | 274 | |

PlasmoDB :: Query History

Gene history

| ID | Name | Report | Download | Size | DatasetId | |
|----|--|-----------------------------|-------------------------------|------|-----------|------------------------|
| 5 | Genes Orthologous to Genes in a Query Result organism:Plasmodium vivax Sal-1 dat... | View Result | Download Data | 267 | 3543 | Delete |
| 4 | Genes By PlasmoDB 4.4 Dataset dataset:239156 | View Result | Download Data | 274 | 3542 | Delete |
| 3 | Genes Orthologous to Genes in a Query Result organism:Plasmodium vivax Sal-1 dat... | View Result | Download Data | 7 | 3500 | Delete |
| 2 | Genes By Y2H Protein-Protein Interaction min_observed:2 y2h_locus_tag:PF08_0034 ... | View Result | Download Data | 8 | 3499 | Delete |
| 1 | Gene By Gene ID locus_tag:PF08_0034 | View Result | Download Data | 1 | 3524 | Delete |

Queries & Tools :: Summary Result

Combined Answer: #5 AND #3

Results: 3 (showing 1 to 3)

[Download a report of this result](#)

Product

hypothetical protein

hypothetical protein

hypothetical protein, conserved

Get *P. vivax* proteins likely to interact with GCN5-related and found in sporozoites based on orthology, mass spec, and Y2H data in *P. falciparum*

1111111111

Anticipated 2006 Datatypes

- RNA abundance
- arrayCGH
- proteomics
- population genetics - SNPs, genetic maps, LD, haplotypes
- field isolate protocols
- phylogenomics

New Website Tools

- OrthoMCL-DB, PPE-based queries
- Gbrowse-based synteny views
- Web services-based user analyses
(BLAST, motif search, etc.)
- Import/export query results between
ApiDB databases

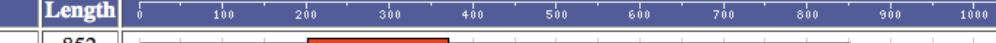
Group Query Result

Your Query is : (ALV=7T AND ALV>=7) AND MAM=0 (Phyletic Pattern Expression)

Group Search Result : 171 OrthoMCL Groups

Group #1 ~ #10 / 171

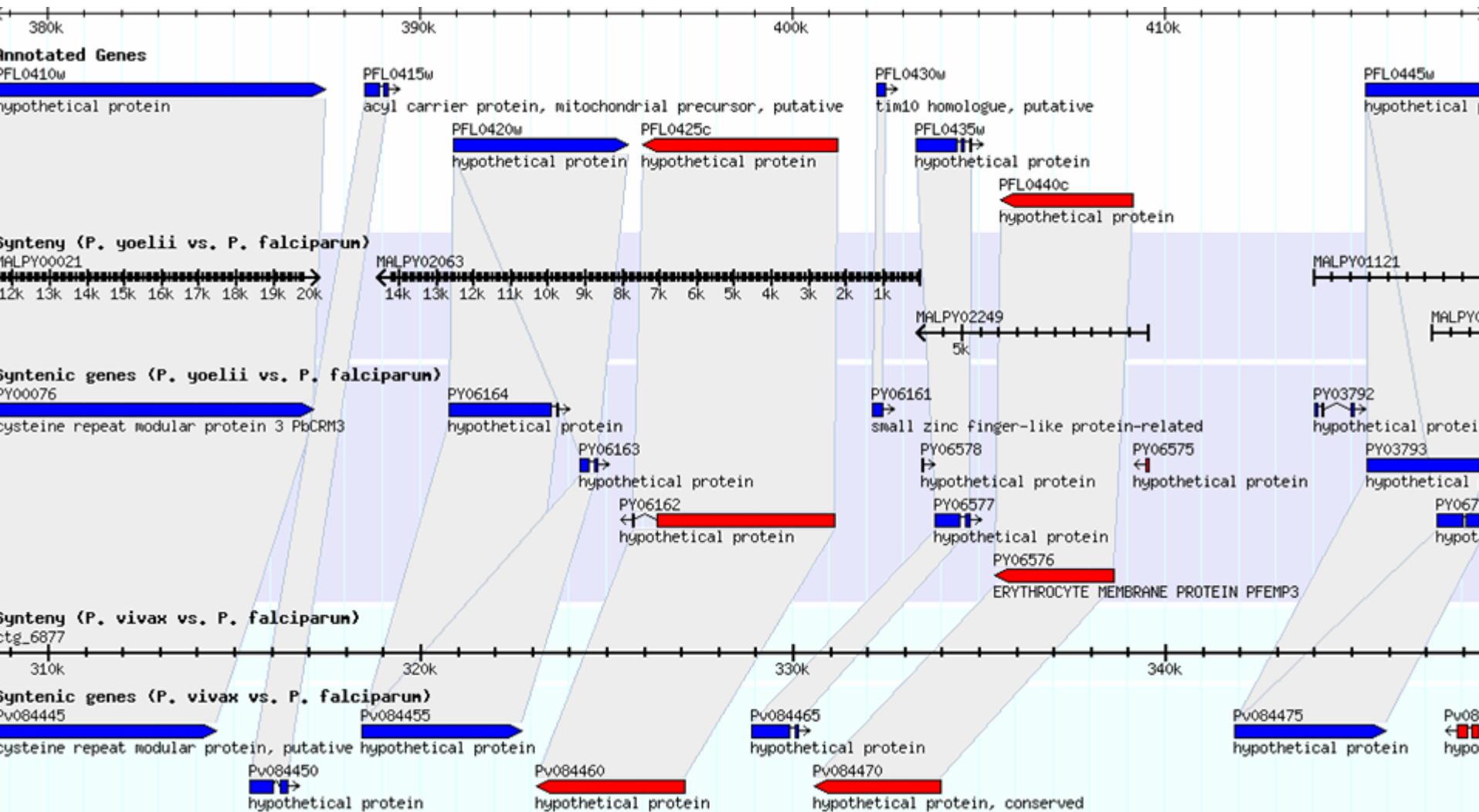
[1](#) [2](#) [3](#) [4](#) [5](#) [6](#) ... [Next Page](#) Jump to page: / 18 [Go!](#)

| Number | Accession | Taxon | Length | Accession & Description |
|--------|-------------------------|--|--------|---|
| 1 | pfa1171 | <i>Plasmodium falciparum</i> 3D7 | 852 | PF14_0491 hypothetical protein |
| 2 | pfa2599 | <i>Plasmodium falciparum</i> 3D7 | 1029 | PFA0445w hypothetical protein |
| 3 | pyo4254 | <i>Plasmodium yoelii</i> 17XNL | 447 | PY06758 hypothetical protein |
| 4 | pyo6975 | <i>Plasmodium yoelii</i> 17XNL | 879 | PY01624 hypothetical protein |
| 5 | pkn934 | <i>Plasmodium knowlesi</i> | 661 | c002500708_Contig_0157.C.cand.2 |
| 6 | pkn5354 | <i>Plasmodium knowlesi</i> | 1042 | c000100569_Contig_1393.C.cand.2 |
| 7 | cpa2114 | <i>Cryptosporidium parvum</i> Iowa (Type2) | 712 | EAK90448 CpFNPA, extracellular protein with a signal peptide, FN2 domain and an anthrax toxin-N-terminus like domain. starts at second Met with signal peptide following |
| 8 | cho710 | <i>Cryptosporidium hominis</i> TU502 (Type 1) | 771 | EAL37510 hypothetical protein Chro.70534 |
| 9 | tgo3947 | <i>Plasmodium falciparum</i> 3D7 | 852 |  |
| 10 | tgo4097 | <i>Plasmodium falciparum</i> 3D7 | 1029 |  |
| 11 | the1108 | <i>Plasmodium yoelii</i> 17XNL | 447 |  |
| | pyo6975 | <i>Plasmodium yoelii</i> 17XNL | 879 |  |
| | pkn934 | <i>Plasmodium knowlesi</i> | 661 |  |
| | pkn5354 | <i>Plasmodium knowlesi</i> | 1042 |  |
| | cpa2114 | <i>Cryptosporidium parvum</i> Iowa (Type2) | 712 |  |
| | cho710 | <i>Cryptosporidium hominis</i> TU502 (Type 1) | 771 |  |
| | tgo3947 | <i>Toxoplasma gondii</i> | 851 |  |
| | tgo4097 | <i>Toxoplasma gondii</i> | 998 | |
| | the1108 | <i>Theileria parva</i> | 865 | |

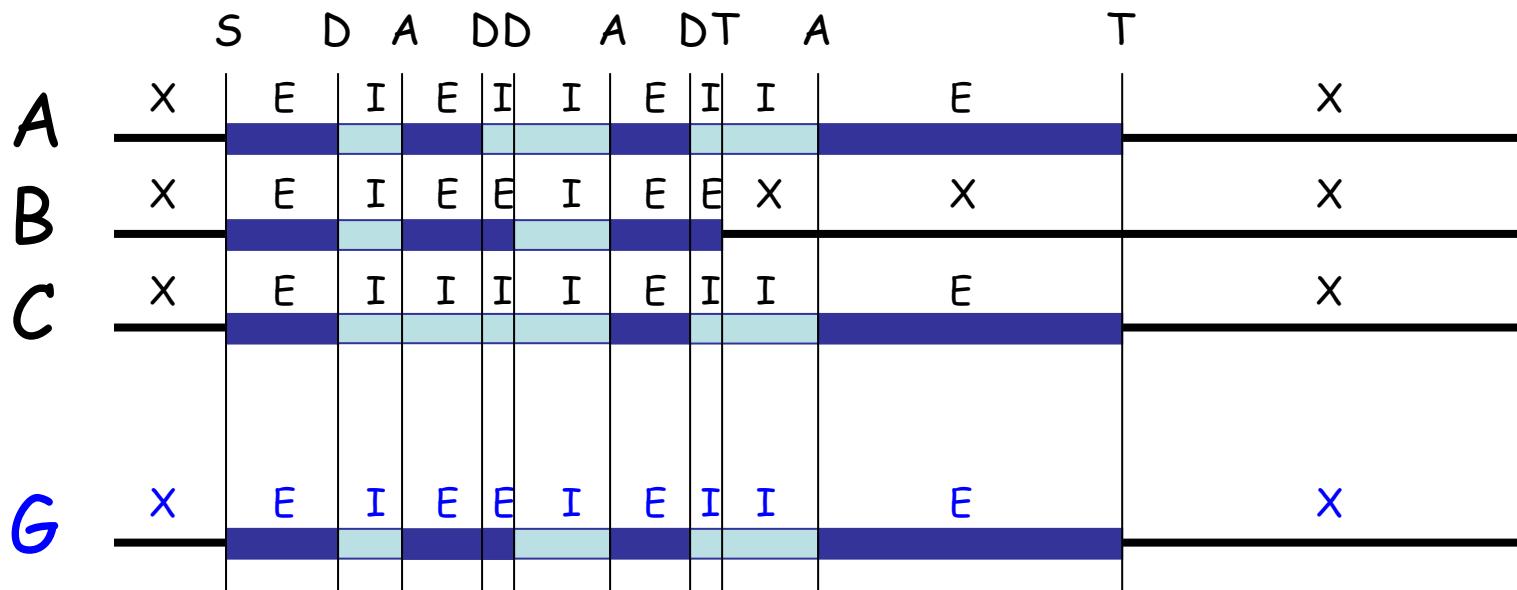
New Software

- GUS 3.5 Schema & App. Framework
- Website Development Kit (WDK)
- Web Services Framework (WSF)
- SQL DAS adaptor
- SynView
- GLEAN

SynView: Gbrowse-based synteny viewer



GLEAN: statistical "consensus" gene annotation



Education & Outreach

- PlasmoCD
- Posters/presentations at:
 - Molecular Parasitology Meeting (Woods Hole, MA)
 - Gordon Conference on Host Parasite Interactions
- Tutorials/workshops at:
 - MIM (Yaounde, Cameroon)
 - Vivax Malaria Research Workshop (TIGR)
 - ASTMH vendor booth (Washington, D.C.)
- June 2006 - 4-day ApiDB workshop

PlasmoCD

Plasmodium falciparum
Plasmodium vivax
Plasmodium yoelii

PlasmoCD

Choose a *Plasmodium* genome to explore!



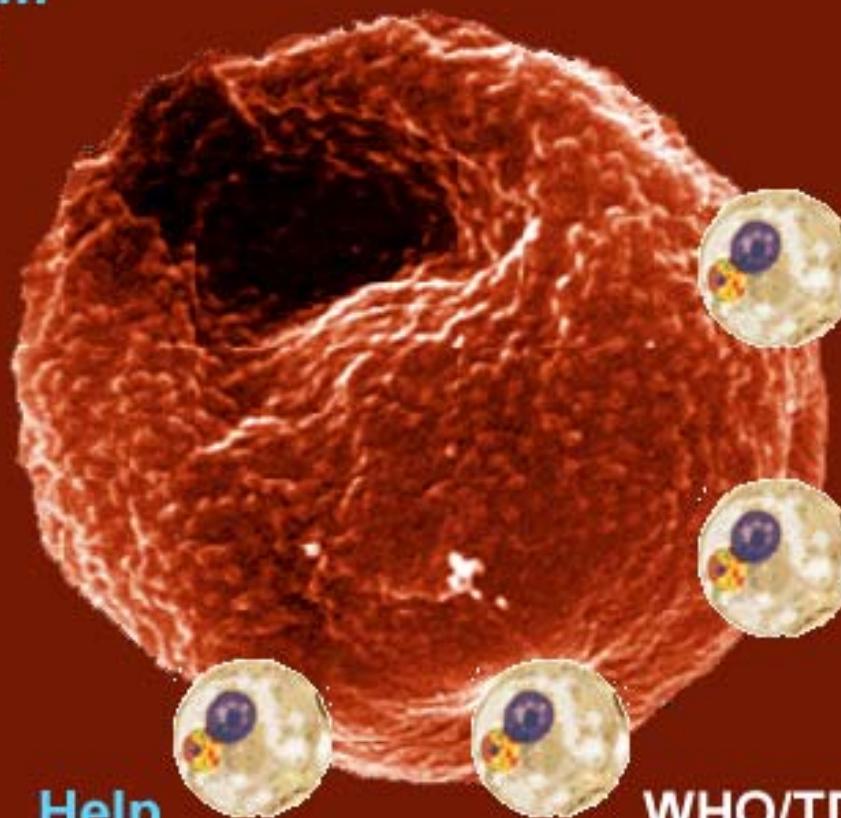
[P. falciparum](#)



[P. vivax](#)



[P. yoelii](#)



[Help](#)



[Publications](#)



[MR4
reagents,
methods](#)



[WHO/TDR
grant forms](#)

[Cliquez ici pour les pages d'aide en français](#)

Research

- WDK-enabled database federation
- AJAX-based advanced form widgets
- Custom analysis workflows

People - Users

| | Unique visitors | Number of visits | Pages | Hits | Bandwidth |
|----------|-----------------|------------------|-----------|-----------|-----------|
| CryptoDB | 1,269 | 2,742 | 18,830 | 29,346 | 4.2 Mb |
| ToxoDB | 5,454 | 11,622 | 99,168 | 357,588 | 10.4 Gb |
| PlasmoDB | 16,917 | 43,938 | 1,402,176 | 2,662,943 | 93.0 Gb |
| ApiDB | 994 | 1,326 | 2,700 | 3,826 | 332.3 Mb |

People - Staff

